

ETHERNET ACCESS

Data sheet for the MEF-Defined E-Access Service Type

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GENERAL

Related Documents	Telstra Wholesale fact sheet: https://www.telstrawholesale.com.au/products/data/ethernet.html Telstra Service Interface Specification (TSIS) [commercial-in-confidence] TSIS Addendum for E-Access [commercial-in-confidence]
Supported MEF Service Types ¹	E-Access: Access EPL (Port-based at the UNI) – Supported on all access types Access EVPL (VLAN based at UNI) – Only supported on Telstra Fibre accesses and Telstra Mobile accesses
Service Speeds ²	2 Mbps to 2Gbps Telstra Fibre Accesses: 20 Mbps to 2Gbps Telstra Copper Accesses: 2 to 10Mbps NBN Accesses, FTTP: 5, 10, 20, 30, 40 & 50 Mbps FTTN, FTTC and FTTB: 5 Mbps & 10 Mbps Telstra Mobile Accesses: up to 2Mbps and up to 10Mbps ³

ENNI ATTRIBUTES (AGGREGATED HEAD END)

Interface Types	1000Base-T 1000Base-SX 1000Base-LX 10GBASE-SR 10GBASE-LR
Interface Modes	Auto Negotiate (Default) Full Duplex
Access Type	Fibre-based
ENNI Access Availability Target	99.90%: Single uplink (fibre-based access) 99.98%: Fully redundant ⁴ pair (fibre-based access). The ENNI pair can either be co-located or geographically diverse ⁵
Frame Formats	IEEE Std 802.1ad (Ethertype 0x88A8) or IEEE Std 802.1Q (Ethertype 0x8100)
ENNI MTU Size ⁶	Jumbo: 9004 bytes
ENNI Service Multiplexing	Yes, for both Access EPL and Access EVPL (i.e. a single S-VLAN ID is mapped to the OVC at the ENNI)

¹ The MEF-defined E-Line service Type (EVPL) is also supported on the EA product. E-Line services are described in a separate data sheet at <https://www.telstrawholesale.com.au/products/data/ethernet-access.html>

² Actual speeds achieved are dependent on a range of factors described in the TSIS documents, including (but not limited) to distance from exchanges for accesses which are not on Telstra fibre

³ When use as a backup for Telstra fibre access, the service speed on the Telstra mobile access cannot exceed the service speed on Telstra fibre

⁴ Fully redundant (FR) means that there is a second NTU that is dual-homed to the Layer 2 Edge of the pseudowire/ VPLS cloud, with geographically diverse fibre access paths, enabling flexible customer-managed failover at Layer 3

⁵ Business rules apply to the locations of a fully redundant pair of ENNIs

⁶ The MTU at the ENNI cannot be considered in isolation and needs to be cognisant of the tail UNI MTU and physical access (bearer) technology

UNI ATTRIBUTES (TAIL END)

	Telstra Fibre Access	Telstra Copper Access	NBN Access	Telstra Mobile Access
Interface Types	10Base-T 100Base-Tx 1000Base-T 1000Base-SX 1000Base-LX 10GBASE-SR 10GBASE-LR	10Base-T 100Base-Tx	100Base-Tx 1000Base-T 1000Base-SX 1000Base-LX	10Base-T 100Base-Tx 1000Base-T 1000Base-SX 1000Base-LX
Interface Mode	Auto Negotiate (Default) Full Duplex Half Duplex			
Access Types	Telstra Fibre-based Telstra Copper-based : Premium CoS (1:1) only. Access-EPL only ⁷ NBN: FTTP, FTTN, FTTC, FTTB: Premium CoS (1:1) only. Access-EPL only Telstra Mobile: Use as a backup for a tail-end Telstra Fibre-based access type only			
UNI Access Availability Target	99.70%: Single uplink (NBN Access) 99.80%: Single uplink (Telstra copper accesses) 99.90%: Single uplink (Telstra fibre accesses) 99.95%: Single uplink with Mobile Backup (Telstra Fibre access + Telstra Mobile access) 99.98%: Fully redundant uplink (Telstra fibre accesses) ⁸			
UNI MTU Size	Telstra Fibre accesses: 1596 bytes (standard) 9000 bytes (jumbo) Telstra Copper Accesses: 1522 bytes NBN Accesses: 1522 bytes Mobile Accesses: 1596 bytes ⁹			
UNI Shut Down	Disabled			
UNI Service Multiplexing	For Access EVPL only Fibre Accesses : (≥1 OVC associated with the UNI and based on CE-VLAN ID) Mobile Accesses: (Only 1 OVC associated with the UNI) ¹⁰			

⁷ On Telstra copper accesses, only untagged frames are permitted to ingress the UNI

⁸ Fully Redundant tail UNIs cannot be geo-diverse nor copper-based nor NBN-based

⁹ Jumbo frames are not supported on Telstra mobile accesses and therefore should not be used as a backup for Telstra fibre accesses if Jumbo frames are required

¹⁰ Only one OVC can be associated with the UNI on Telstra mobile accesses and therefore should not be used as a backup for Telstra fibre accesses if more than one OVC needs to be associated with the UNI

CE-VLAN ID (C-VID) Bundling	<p>Access EPL: All-to-one (All ¹¹ C-VIDs mapped to one OVC at the UNI)</p> <p>Access EVPL: One-to-one: One C-VID mapped to one OVC at the UNI Many-to-one: >1 C-VIDs mapped to one OVC at the UNI (Telstra fibre and Telstra mobile accesses only)</p>
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OVC ATTRIBUTES

Available Classes of Service	<p>Expedited (1:1 CIR:PIR): Short queues and strictly enforced rates, optimised for small frame sizes and low-jitter interactive unidirectional applications, like VoIP and videoconferencing. Not available over Telstra copper accesses, NBN accesses and Telstra mobile accesses.</p> <p>Priority (1:1 CIR:PIR): Short queues with reliable delivery even if delayed. Used for selected 'real time' applications like SQL database queries and unidirectional streaming video. Not available over Telstra copper accesses, NBN accesses and Telstra mobile accesses.</p> <p>Premium (1:1 CIR:PIR): Medium queues with low discard preference, used for key business applications like email and large file transfers. This is the only class of service available over Telstra copper accesses and over NBN accesses. Not available over Telstra mobile accesses.</p> <p>Standard (0:1 CIR:PIR): Deep queues with higher discard preference, used for best effort applications like web browsing. Not available over Telstra copper or over NBN accesses. This is the only Class of Service available over Telstra mobile accesses¹².</p>
Class of Service Operation	<p>Single CoS: Any one of the four available CoS can be used within the OVC (subject to the access type as above)</p> <p>Multi-CoS¹³: Up to four CoS are concurrently supported within the same OVC. (Only supported on Telstra Fibre Accesses)</p>
OVC Frame Mapping	<p>At the ENNI end-point, frames are mapped to the OVC using the S-Tag VLAN ID.</p> <p>At the UNI endpoint: Single-CoS: Frames are C-VID mapped to the OVC irrespective of customer CoS marking Multi-CoS¹³: Frames can be either C-tag mapped (C-VID and PCP) or DSCP-mapped</p>

¹¹ Including untagged frames

¹² When the traffic fails over from Telstra fibre access to Telstra mobile access, the traffic is carried in a best-effort capacity only. There is no Class of Service differential treatment in the Telstra mobile network. Traffic failover occurs when the physical fibre between the tail-end NTU and the aggregation switch located in the Telstra exchange is down.

¹³ Multi-CoS is not supported on Telstra mobile accesses and therefore should not be used as a backup for Telstra fibre accesses if Multi-Cos is being enabled.

Target Network Performance Objectives, (ENNI-to-UNI)	Class of Service	Frame Loss Ratio	Average One-way Frame Delay			Average Frame Delay Variation
			0-161km	162-1609km	1610-16093km	
	Expedited	<0.01%	<5.7ms	<14.5ms	<37.5ms	<1ms
	Priority	<0.01%	<10ms	<20ms	<43ms	Not Specified
	Premium	<0.1%	Not Specified			Not Specified
Standard	Best Effort					
Bandwidth Profile Rates ¹⁴	Access EPL: For single-CoS OVC: Per UNI and per ENNI.OVC For multi-CoS ¹³ OVC: Per UNI.CoS and per ENNI.OVC.CoS Access EVPL: For single-CoS OVC: Per UNI.OVC and per ENNI.OVC For multi-CoS ¹³ OVC: Per UNI.OVC.CoS and per ENNI.OVC.CoS					
Colour Mode	Colour blind ¹⁵ : Expedited: 1:1 (CIR Only) Priority: 1:1 (CIR Only) Premium: 1:1 (CIR Only) Standard : 0:1 (EIR only)					
Colour Forwarding ¹⁶	Yes					
CoS Marking Preservation	Layer 2 priority (802.1p) and Layer 3 priority (DSCP) always preserved end-to-end					
CE-VLAN ID Preservation	CE-VLAN IDs are preserved from UNI to ENNI as per relevant MEF specifications					
Layer 2 Control Processing	Discard for both Access EPL and Access EVPL The following Layer 2 control protocols will be discarded at UNI/ENNI ingress: xSTP, LLDP, PAUSE frames, GARP/MRP, LACP/LAMP, CDP, Link OAM, VTP, Port Authentication, UDLD, E-LMI					
S-Tag VLAN ID	Telstra allocates SVID, or customer indicates preferences ¹⁷ Valid S-VID range in both cases is 1001-2999					
Service Frame Delivery	Known Unicast: Unconditionally supported ¹⁸ Unknown Unicast: Conditionally Supported ¹⁹					

¹⁴ Bandwidth Profiles are a method of characterising Service Frames for the purpose of rate enforcement or policing. Incorrectly shaped traffic ingressing a UNI or ENNI towards Telstra will be policed accordingly. The policers are agnostic to any layer-2 marking for single CoS services so will discard traffic on an 'as they arrive' basis. This means non-conforming high-value and low-value traffic have similar probability of being discarded.

¹⁵ A colour-blind profile is one where the ingress OVC policer at the UNI ignores any existing colour indication that the service frame is already conformant to CIR (green) or EIR (yellow)

¹⁶ Colour Forwarding describes the relationship between the colour on an ingress frame into the Operator (Telstra) Network and the colour of the resulting egress ENNI Frame. When Colour Forwarding is Yes, the OVC cannot "promote" a frame from Yellow to Green

¹⁷ Customer preferences may not be allocable on shared infrastructure, in which case Telstra will unilaterally allocate an available S-VID

¹⁸ Subject to the CoS performance objectives

¹⁹ Where CoS = Premium and the ENNI Access Topology is fully redundant, broadcast, unknown-unicast, and multicast frames are not transparently passed. Also, broadcast and multicast frames are not supported on Copper Accesses. Refer to TSIS

	Broadcast: Conditionally Supported ¹⁴ Multicast: Conditionally Supported ¹⁴
MAC Address Limit	50 (Enforced in the network)
OVC MTU	Fibre accesses: 1600 bytes (default) 9004 bytes (requires approval) Copper Accesses: 1522 bytes NBN Accesses: 1526 bytes Mobile Accesses: 1600 bytes ⁹
Service OAM Processing	IEEE 802.1ag CFM is used for internal operational and fault sectionalisation purposes. Customer Service OAM frames with MD-Level = 5, 6 or 7 will be transparently passed at the UNI and ENNI.
Relevant Specifications	MEF 33, MEF 10.2, MEF 23, IEEE802.1ad
MEF Certification	E-Access Services on Telstra fibre accesses ²⁰ are designed to be compliant with MEF 33, but are not yet certified

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²⁰ There is no intent to MEF-certify services on copper accesses, NBN Accesses or Telstra mobile accesses